CLAIMS

1. A method for constructing selective base pair comprising introducing a group having ability to form steric hindrance between bases in nucleic acid base.

2. The method according to claim 1 wherein the group having ability to form steric hindrance is a group to hinder formation of base pair with base part of natural nucleic acid.

3. The method according to claim 1 or claim 2 wherein the group having ability to form steric hindrance is dialkylamino group.

4. A method for constructing selective base pair comprising introducing a group having ability to form steric hindrance and electrostatic repulsion, and stacking action between bases in nucleic acid base.

5. The method according to claim 4 wherein the group having ability to form steric hindrance and electrostatic repulsion, and stacking action is a group to hinder formation of base pair with base part of natural nucleic acid.

6. The method according to claim 4 or claim 5 wherein the group having ability to form steric hindrance and electrostatic repulsion, and stacking action is aromatic heterocyclic group.

7. The method according to claim 6 wherein aromatic heterocyclic group is five membered or six membered aromatic heterocyclic group having 1 or 2 sulfur atoms, oxygen atoms or nitrogen atoms as a heteroatom.

8. The method according to claim 6 or claim 7 wherein aromatic heterocyclic group is thiophene.

9. The method according to any of claims 1 - 8 comprising introducing a

group to be able to for additional hydrogen bonds.

10. The group to be able to for additional hydrogen bond is an electron pair of amino group, hydroxyl group, keto group or nitrogen group.

11. The method according to any of claims 1 - 10 wherein the base pair is a base pair which can be recognized by polymerase.

12. The method according to claim 11 wherein the polymerase is DNA polymerase or RNA polymerase.

13. A method for designing nucleic acid to construct selective base pair comprising utilizing steric hindrance in the nucleic acid base part.

14. A method for designing nucleic acid to construct selective base pair comprising hindering to construct base pair with the natural nucleic acid base part by utilizing the steric hindrance.

15. A method for designing nucleic acid to construct selective base pair comprising utilizing steric hindrance and electrostatic repulsion, and stacking action in the nucleic acid base part.

16. A method for designing nucleic acid to construct selective base pair comprising hindering to construct base pair with the natural nucleic acid base part by utilizing steric hindrance and electrostatic repulsion and stabilizing to impart stacking action.

17. The method for designing nucleic acid according to any of claims 13 - 16 wherein the nucleic acid base pair is a base pair which can be recognized by polymerase.

18. A nucleic acid comprising being designed by the method according to any of claims 13 - 17.

19. The nucleic acid according to claim 18 wherein the nucleic acid has

base comprising purine derivatives having a group at position-6 which can generate steric hindrance.

20. The nucleic acid according to claim 19 wherein the nucleic acid base is 2-amino-6-N,N-dimethylamino-purine.

21. The nucleic acid according to claim 19 wherein the nucleic acid base is 2-amino-6-thienyl-purine or derivatives thereof.

22. The nucleic acid according to claim 18 wherein the nucleic acid has base containing pyridine having hydroxyl group or keto group at position-2.

23. The nucleic acid according to claim 22 wherein the nucleic acid base is pyridine-2-one or tautomer thereof.

24. The nucleic acid according to any of claims 18 - 23 wherein the nucleic acid is a nucleic acid constructing base pair with its complementary nucleic acid.

25. A process for production of the nucleic acid comprising the nucleic acid according to any of claims 18 - 23.

26. The process according to claim 25 wherein the nucleic acid is another nucleic acid to construct base pair.

27. A codon comprising one or more nucleic acid according to any of claims 18 -24.

28. The codon according to claim 27 wherein the codon encodes amino acids.

29. The codon according to claim 28 wherein amino acids are non-natural amino acids.

30. A nucleic acid molecule comprising containing the nucleic acid according to any of claims 18 - 24 and natural nucleic acid.

31. The nucleic acid molecule according to claim 30 wherein the nucleic acid molecule encodes proteins.

32. The nucleic acid molecule according to claim 30 or claim 31 wherein the nucleic acid molecule has whole or part of genetic information of the natural gene.

33. A process for production of nucleic acid having complementary strand thereof comprising reacting the polymerase with the nucleic acid according to any of claims 30 -32.

34. The method according to claim 33 wherein the polymerase is DNA polymerase or RNA polymerase.

35. A process for production of non-natural nucleic acid comprising inserting or substituting one or more nucleic acid according to any of claims 18 - 24 in the natural nucleic acid.

36. The process for production of non-natural nucleic acid according to claim 35 wherein a position, to which the nucleic acid according to any of claims 18 - 24 is inserted or substituted, has a codon unit and the other part has base sequence encoding natural amino acid sequence.

37. A process for production of protein having amino acid sequence based on codons of the nucleic acid according to any of claims 30 -32 or the non-natural nucleic acid obtained by the method according to claim 35 or claim 36.

38. The process for production of protein according to claim 37 comprising being inserted or substituted by the non-natural amino acid in the part or whole of amino acid sequence of natural protein.

39. A microorganism which is transformed by non-natural gene which can be produced by the process according to claim 35 or claim 36.

40. A method for screening functions of amino acids coded by natural gene comprising using the non-natural gene which can be produced by the method according to claim 35 or claim 35.